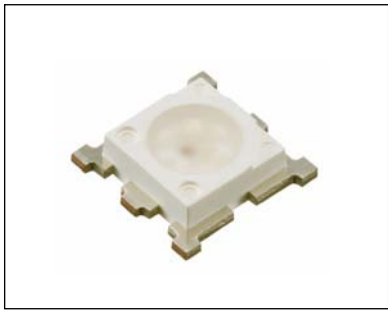




Pb-free
HEAT



JRGB1316LS

PLCC-6 Type Tri-color

Features

Package	PLCC-6 Type, Milky White resin	
Product features	• Outer Dimension 6.0 x 6.0 x 1.6mm (L x W x H) • Temperature range Storage Temperature : -40℃~100℃ Operating Temperature: -40℃~85℃ • Lead-free soldering compatible • RoHS compliant	
Dominant wavelength	Blue	: 470nm
	Green	: 525nm
	Red	: 625nm
Half Intensity Angle	120 deg.	
Die materials	Blue, Green	: InGaN
	Red	: AlGaInP
Rank grouping parameter	Sorted by chromaticity per rank taping	
Assembly method	Auto pick & place machine (Auto Mounter)	
Soldering methods	Reflow soldering and manual soldering	
Taping and reel	1,000pcs per reel in a 12mm width tape. (Standard) Reel diameter: ϕ 180mm	

Recommended Applications

Cellular Phone, Electric Household Appliances, Amusement Equipment, Other General Applications



JRGB1316LS

PLCC-6 Type Tri-color

Color and Luminous Intensity

(Ta=25°C)

<One LED Die lighted>

Part No.	Material	Emitted Color	Lens Color	Dominant Wavelength λ_d (nm)		Luminous Intensity I_v (mcd)		
				TYP.	I_F	MIN.	TYP.	I_F
JRGB1316LS	InGaN	Blue	Milky White	470	10	-	220	10
	InGaN	Green		525	20	-	1,100	20
	AlGaInP	Red		625	30	-	480	30

<White Sorting of Simultaneous RGB Lighting>

Part No.	Emitted Color	Total Luminous Intensity I_v (mcd)			Chromaticity Coordinates	
					x	y
		MIN.	TYP.	I_F	TYP.	TYP.
JRGB1316LS	Blue	-	1,800	10	0.29	0.29
	Green			20		
	Red			30		

Absolute Maximum Ratings

(Ta=25°C)

Item		Symbol	Absolute Maximum Ratings			Unit
			Blue	Green	Red	
Power Dissipation		P _d	120	168	140	mW
Total Value of Power Dissipation		P _d	360 ^{※1}			mW
Forward Current	One Diode Lighted	I _F	30	40	45	mA
	All Diodes Lighted	I _F	20	35	45	mA
Pulse Forward Current ^{※2}	One Diode Lighted	I _{FRM}	150	150	150	mA
	All Diodes Lighted	I _{FRM}	120	120	120	mA
Derating (Ta=60°C or higher)	One Diode Lighted	Δ I _F	0.8	1.0	1.0	mA/°C
		Δ I _{FRM}	3.6	3.6	3.6	mA/°C
	All Diodes Lighted	Δ I _F	0.6	1.0	1.0	mA/°C
		Δ I _{FRM}	3.6	3.6	3.6	mA/°C
Reverse Voltage		V _R	5	5	5	V
Operating Temperature		T _{opr}	-40~+85			°C
Storage Temperature		T _{stg}	-40~+100			°C

※1 The maximum Power Dissipation at the time of Simultaneous RGB Lighting (White lighting)

※2 I_{FRM} Measurement condition : Pulse Width $\leq 1\text{ms}$, Duty $\leq 1/20$.

Electro-Optical Characteristics

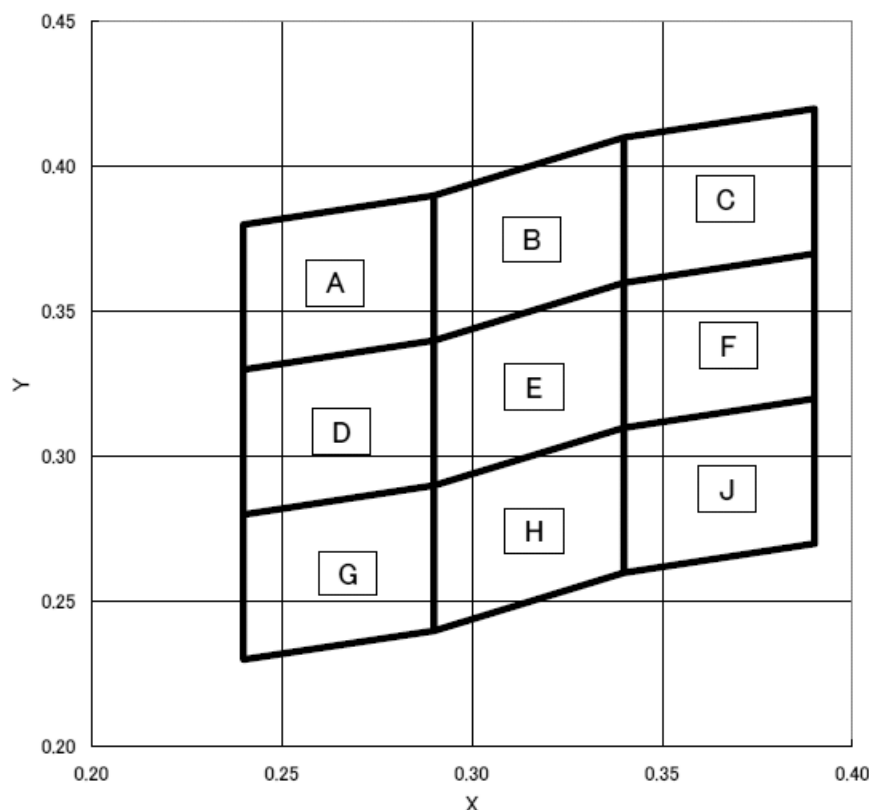
(Ta=25°C)

Item	Conditions	Symbol	Characteristics				Unit
			Blue	Green	Red		
Forward Voltage	Blue:I _F =10mA Green:I _F =20mA Red:I _F =30mA	V _F	TYP.	3.07	3.2	2.35	V
			MAX.	3.8	4.0	3.0	
Reverse Current	V _R =5V	I _R	MAX.	100	100	100	μ A
Dominant Wavelength	Blue:I _F =10mA Green:I _F =20mA Red:I _F =30mA	λ _d	TYP.	470	525	625	nm
Spectral Line Half Width	Blue:I _F =10mA Green:I _F =20mA Red:I _F =30mA	Δλ	TYP.	19	32	18	nm
Half Intensity Angle	Blue:I _F =10mA Green:I _F =20mA Red:I _F =30mA	2 θ 1/2	TYP.	120	120	120	deg.

Sorting Chart for Chromaticity Coordinates

(Ta=25°C)

<White Sorting of Simultaneous RGB Lighting>



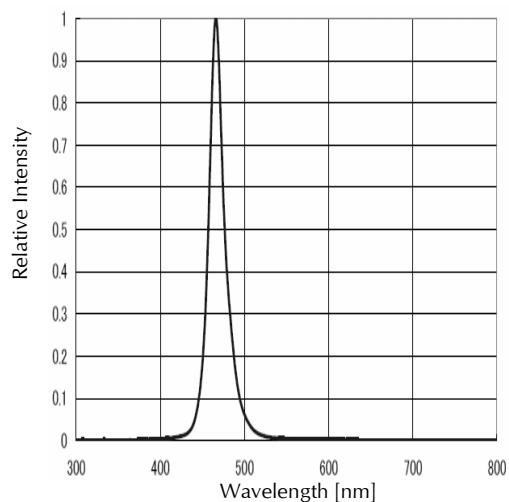
	LEFT DOWN point		LEFT UP point		RIGHT UP point		RIGHT UP point		Condtions
Rank	x	y	x	y	x	y	x	y	
A	0.240	0.330	0.240	0.380	0.290	0.390	0.290	0.340	Blue $I_F = 10\text{mA}$
B	0.290	0.340	0.290	0.390	0.340	0.410	0.340	0.360	
C	0.340	0.360	0.340	0.410	0.390	0.420	0.390	0.370	
D	0.240	0.280	0.240	0.330	0.290	0.340	0.290	0.290	Green $I_F = 20\text{mA}$
E	0.290	0.290	0.290	0.340	0.340	0.360	0.340	0.310	
F	0.340	0.310	0.340	0.360	0.390	0.370	0.390	0.320	
G	0.240	0.230	0.240	0.280	0.290	0.290	0.290	0.240	Red $I_F = 30\text{mA}$
H	0.290	0.240	0.290	0.290	0.340	0.310	0.340	0.260	
J	0.340	0.260	0.340	0.310	0.390	0.320	0.390	0.270	

Chromaticity Coordinates Tolerance Each Rank : +/-0.02

※Please contact our sales staff concerning rank designation.

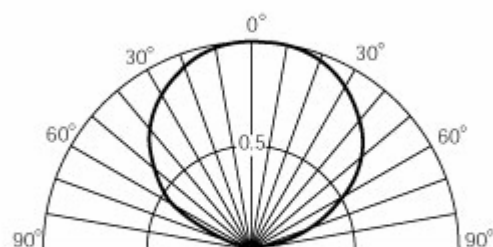
Technical Data(Blue)

Spectral Distribution
Relative Intensity vs. Wavelength
Condition : $T_a = 25^\circ\text{C}$, $I_F = 12\text{mA}$

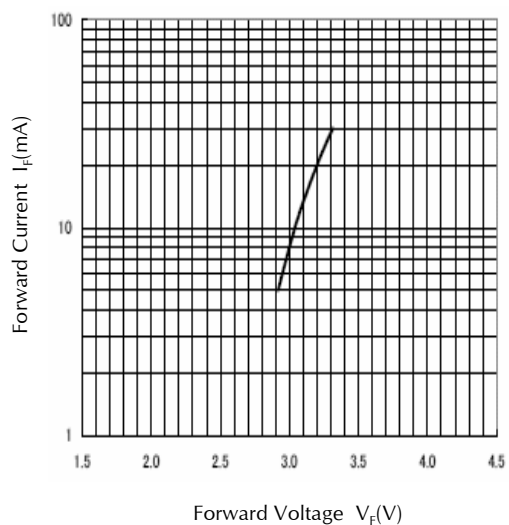


Spatial Distribution Example

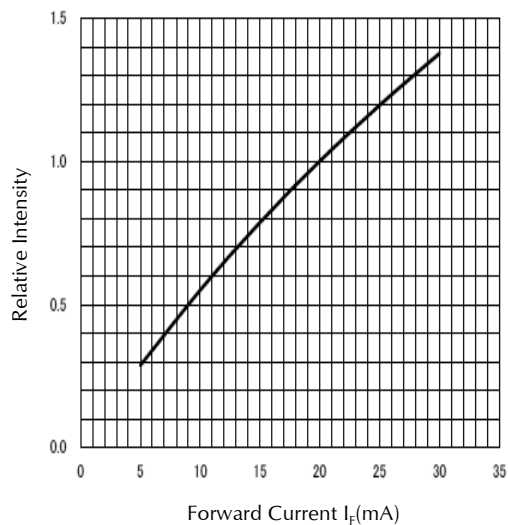
Condition : $T_a = 25^\circ\text{C}$



Forward Voltage vs. Forward Current
Condition : $T_a = 25^\circ\text{C}$



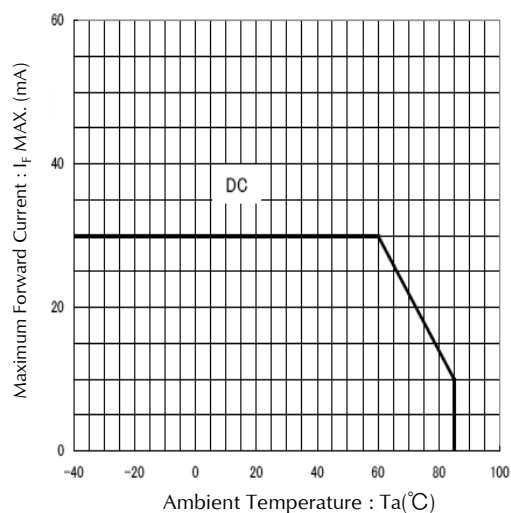
Forward Current vs. Relative Intensity
Condition : $T_a = 25^\circ\text{C}$



Technical Data(Blue)

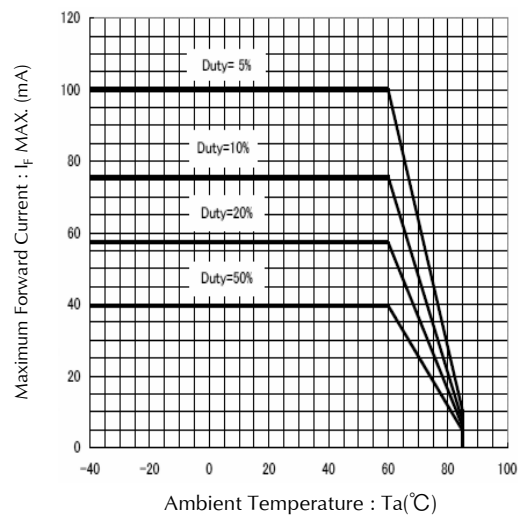
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

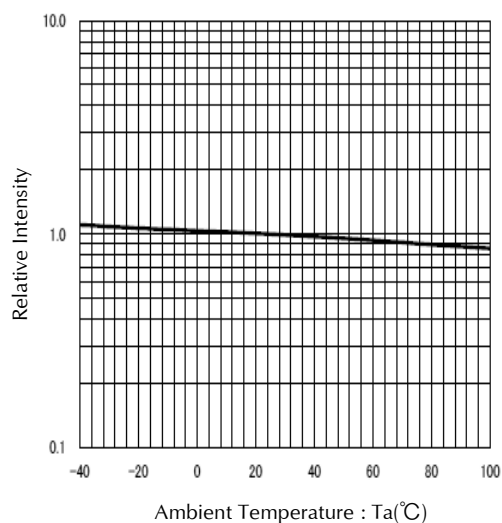


Derating

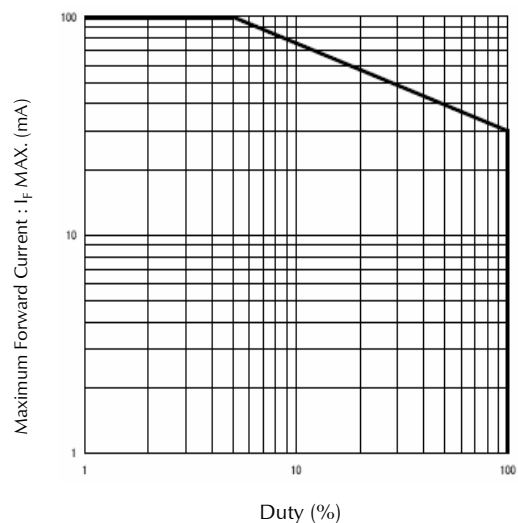
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$



Ambient Temperature vs. Relative Intensity



Duty Cycle vs. Maximum Forward Current

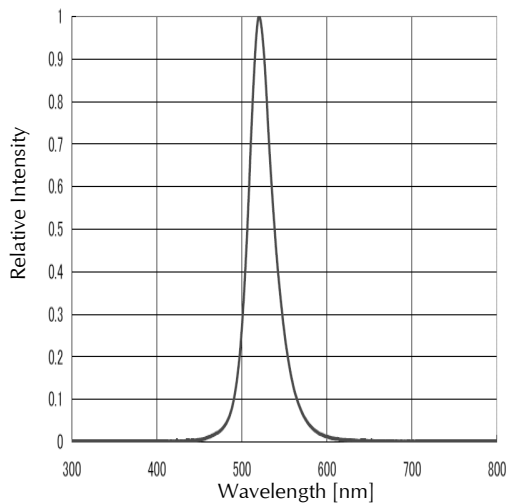


Technical Data(Green)

Spectral Distribution

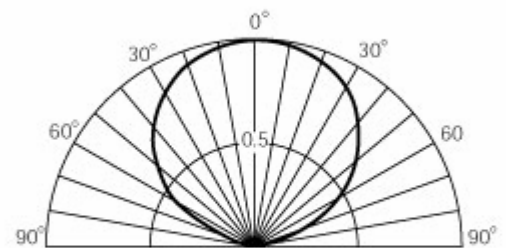
Relative Intensity vs. Wavelength

Condition : $T_a = 25^\circ\text{C}$, $I_F = 27\text{mA}$



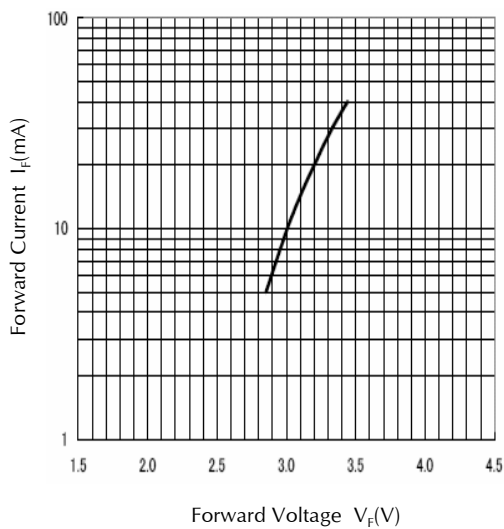
Spatial Distribution Example

Condition : $T_a = 25^\circ\text{C}$



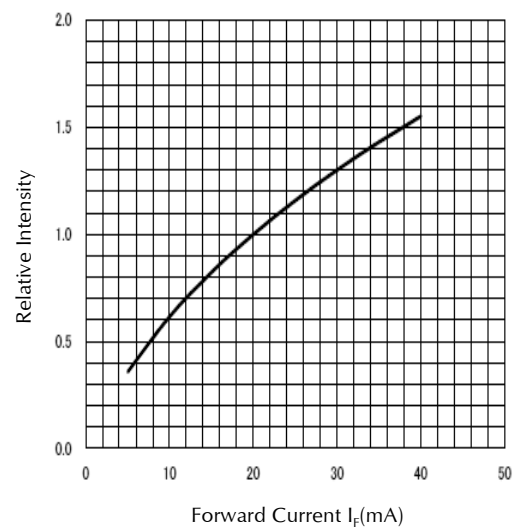
Forward Voltage vs. Forward Current

Condition : $T_a = 25^\circ\text{C}$



Forward Current vs. Relative Intensity

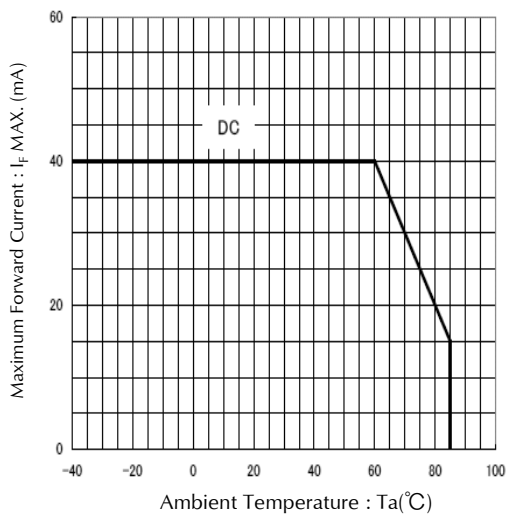
Condition : $T_a = 25^\circ\text{C}$



Technical Data(Green)

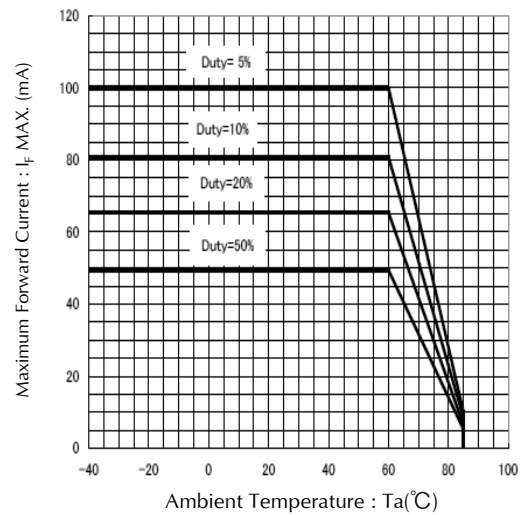
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

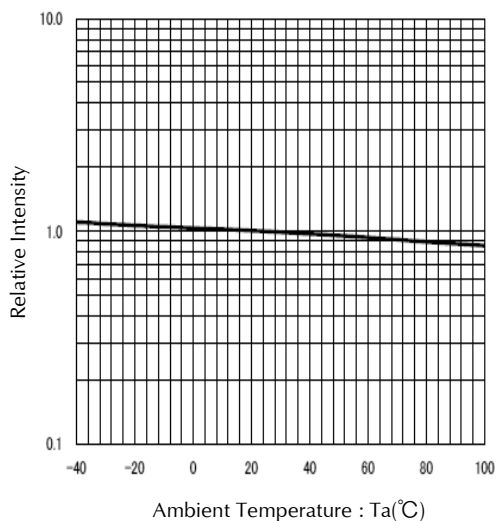


Derating

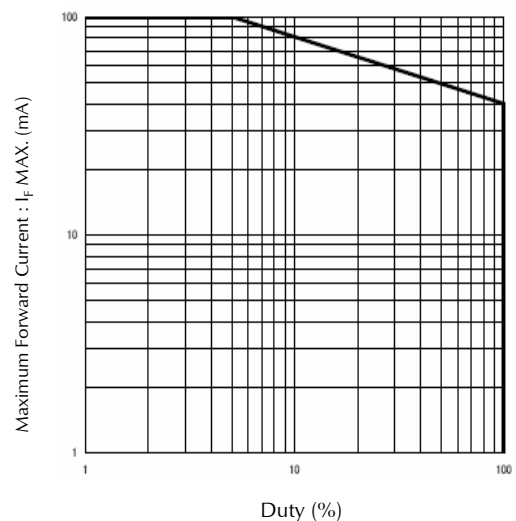
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$



Ambient Temperature vs. Relative Intensity



Duty Cycle vs. Maximum Forward Current

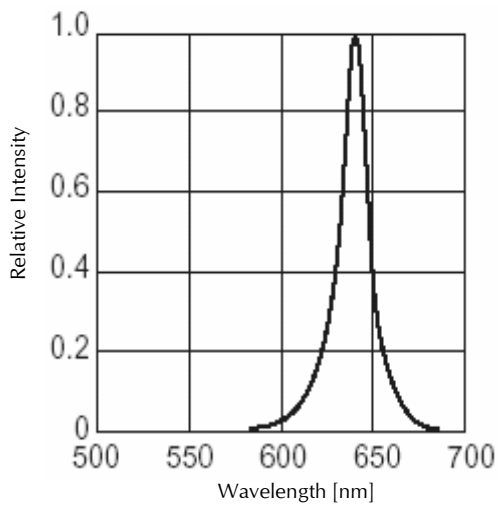


Technical Data(Red)

Spectral Distribution

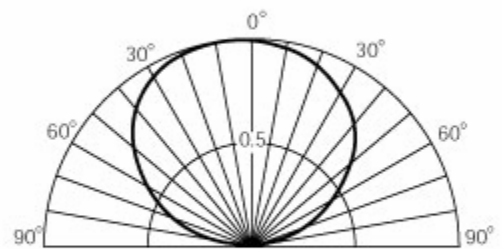
Relative Intensity vs. Wavelength

Condition : $T_a = 25^\circ\text{C}$, $I_F = 23\text{mA}$



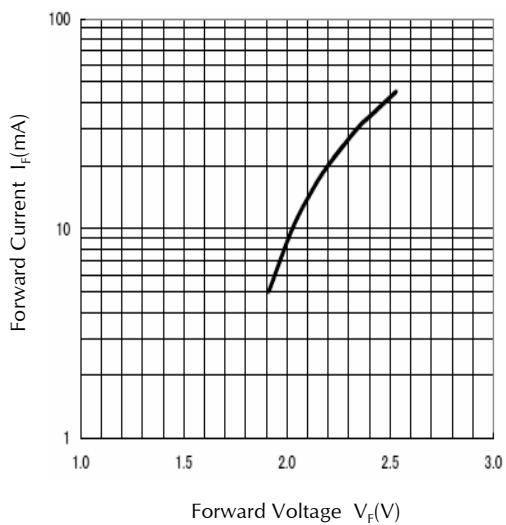
Spatial Distribution Example

Condition : $T_a = 25^\circ\text{C}$



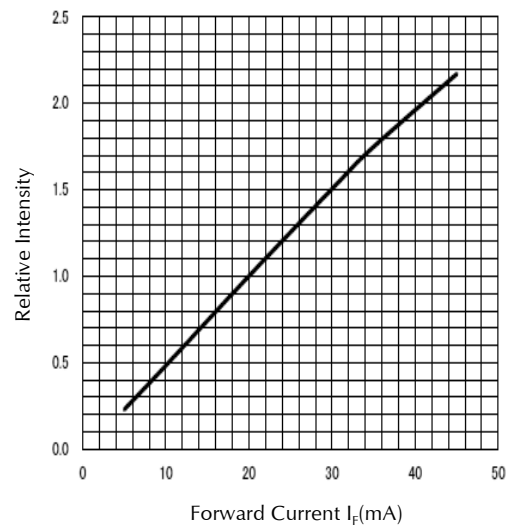
Forward Voltage vs. Forward Current

Condition : $T_a = 25^\circ\text{C}$



Forward Current vs. Relative Intensity

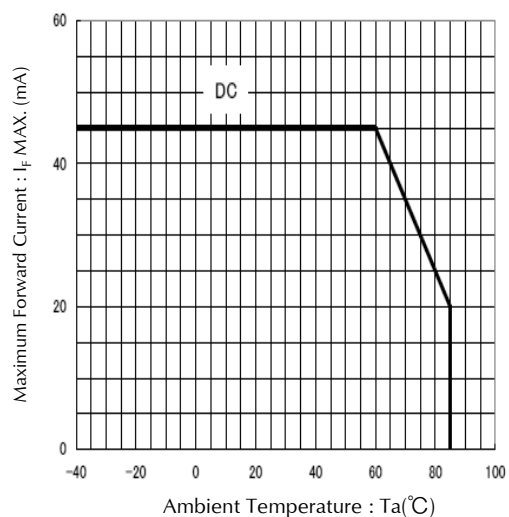
Condition : $T_a = 25^\circ\text{C}$



Technical Data(Red)

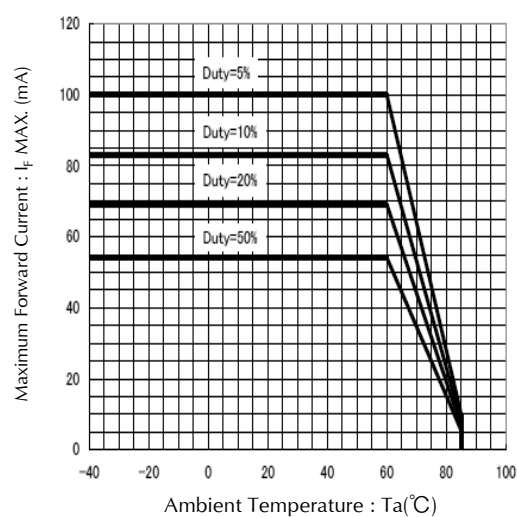
Derating

Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$

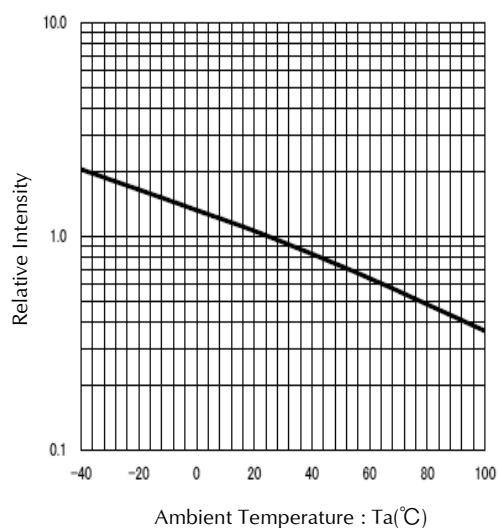


Derating

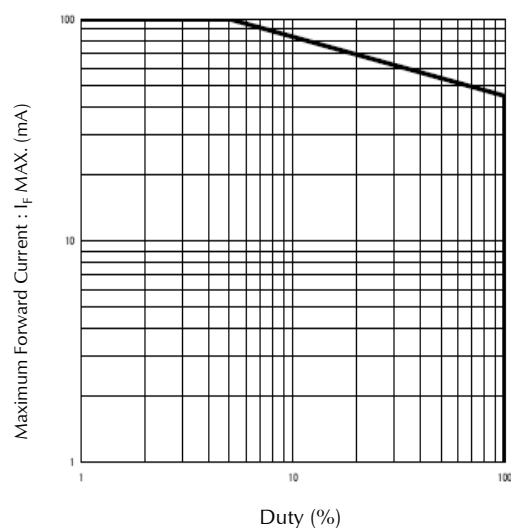
Ambient Temperature vs. Maximum Forward Current
Repetition Frequency : $f \geq 50\text{Hz}$



Ambient Temperature vs. Relative Intensity



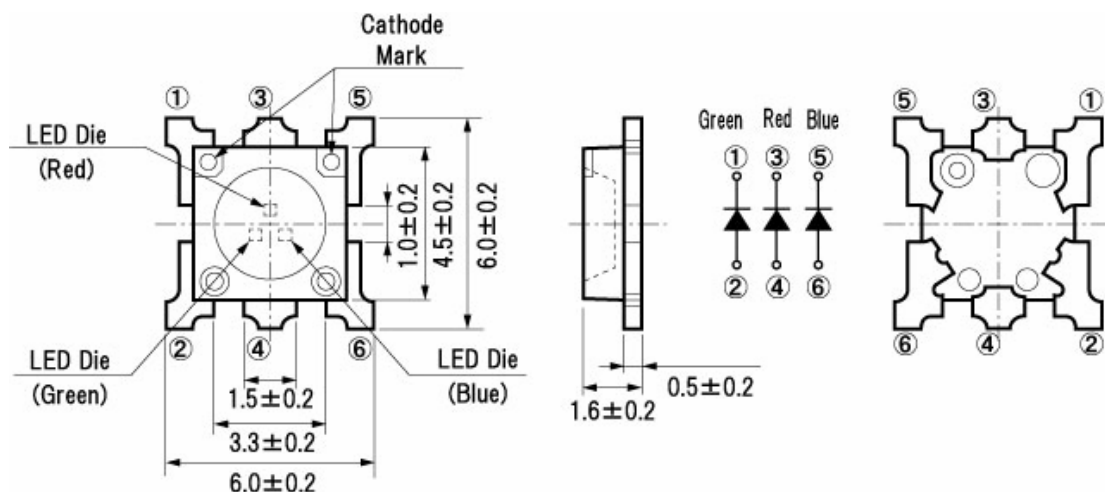
Duty Cycle vs. Maximum Forward Current



Package Dimensions

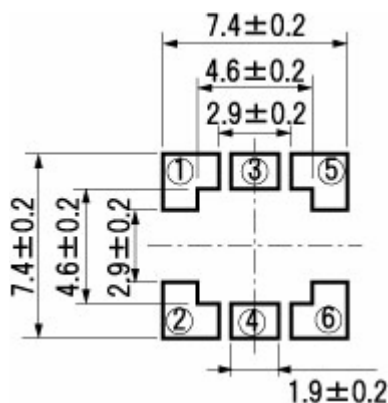
(Unit: mm)

Weight: (113.1)mg



Recommended Soldering Pattern

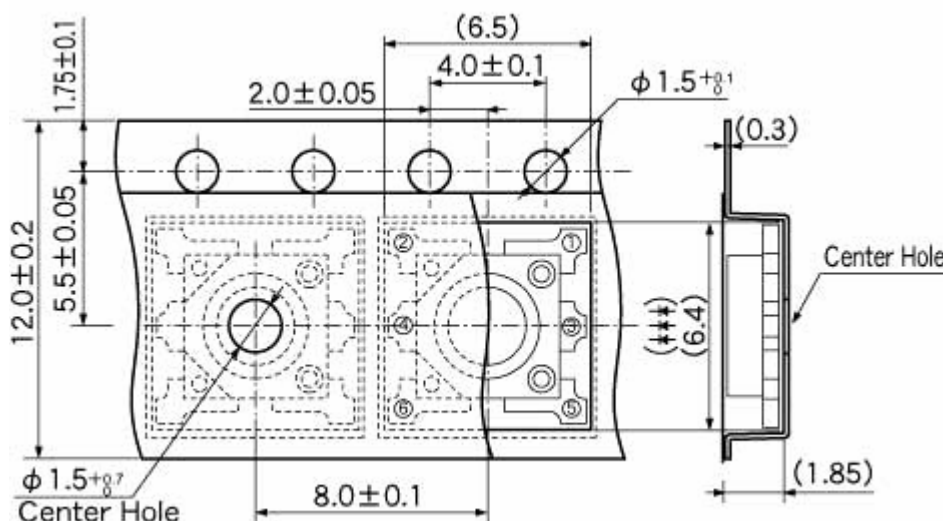
(Unit: mm)



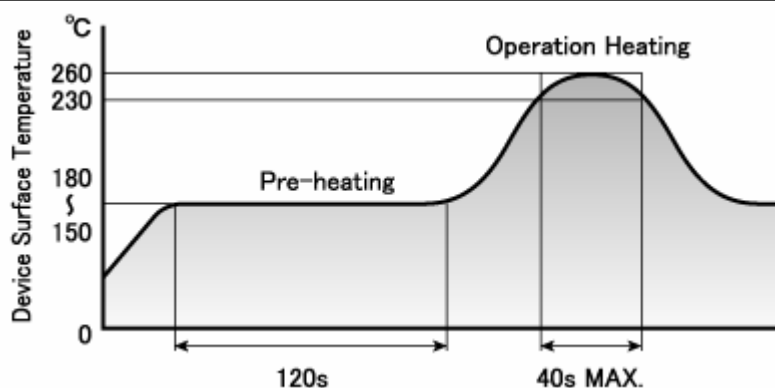
Taping Specification

(Unit: mm)

Quantity: 1,000pcs/ reel (standard)



Reflow Soldering Conditions



- 1) The above profile temperature gives the maximum temperature of the LED resin surface. Please set the temperature so as to avoid exceeding this range.
- 2) Total times of reflow soldering process shall be no more than 2 times. When the second reflow soldering process is performed, intervals between the first and second reflow should be short as possible (while allowing some time for the component to return to normal temperature after the first reflow) in order to prevent the LED from absorbing moisture.
- 3) Temperature fluctuation to the LED during the pre-heating process shall be minimized.

Manual Soldering Conditions

Iron tip temp. 350 °C (MAX.)

Soldering time and frequency 3 s (MAX.)
1 time (MAX.)

Reliability Testing Result

Reliability Testing Result	Applicable Standard	Testing Conditions	Duration	Failure
Room Temp. Operating Life	EIAJ ED-4701/100(101)	Ta = 25°C, If = 20mA(Blue), If = 35mA(Green), If = 45mA(Red), All Diodes Lighted.	1,000 h	0/25
Resistance to Soldering Heat	EIAJ ED-4701/300(301)	Pre-heating : 150~180°C 120s Max. Operation Heating : 230°C 40s Max. Peak Temperature : 260°C	Twice	0/25
Temperature Cycling	EIAJ ED-4701/100(105)	Minimum Rated Storage Temperature(30min) ~Normal Temperature(15min) ~Maximum Rated Storage Temperature(30min) ~Normal Temperature(15min)	5 cycles	0/25
Wet High Temp. Storage Life	EIAJ ED-4701/100(103)	Ta = 60±2°C, RH = 90±5%	1,000 h	0/25
High Temp. Storage Life	EIAJ ED-4701/200(201)	Ta = Maximum Rated Storage Temperature	1,000 h	0/25
Low Temp. Storage Life	EIAJ ED-4701/200(202)	Ta = Minimum Rated Storage Temperature	1,000 h	0/25
Vibration, Variable Frequency	EIAJ ED-4701/400(403)	98.1m/s ² (10G), 100 ~ 2KHz sweep for 20min., XYZ each direction	2 h	0/10

Failure Criteria

Items	Symbols	Conditions	Failure criteria
Luminous Intensity	Iv	If Value of each product Luminous Intensity	Testing Min. Value < Spec. Min. Value x 0.5
Forward Voltage	V _F	If Value of each product Forward Voltage	Testing Max. Value ≥ Spec. Max. Value x 1.2
Reverse Current	I _R	V _R = Maximum Rated Reverse Voltage V	Testing Max. Value ≥ Spec. Max. Value x 2.5
Cosmetic Appearance	-	-	Occurrence of notable decoloration, deformation and cracking

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